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ABSTRACT

A semiconductor device and a method of manufacturing the device using a (000-1)-faced silicon carbide substrate are provided. A SiC semiconductor device having a high voltage resistance, high blocking voltage and high channel mobility is manufactured by optimizing the heat-treatment method used following the gate oxidation. The method of manufacturing a semiconductor device includes the steps of forming a gate insulation layer on a semiconductor region formed of silicon carbide having a (000-1) face orientation, forming a gate electrode on the gate insulation layer, forming an electrode on the semiconductor region, cleaning the semiconductor region surface. The gate insulation layer is formed in an atmosphere containing 1% or more H₂O (water) vapor at a temperature of from 800°C to 1150°C to reduce the interface trap density of the interface between the gate insulation layer and the semiconductor region.